

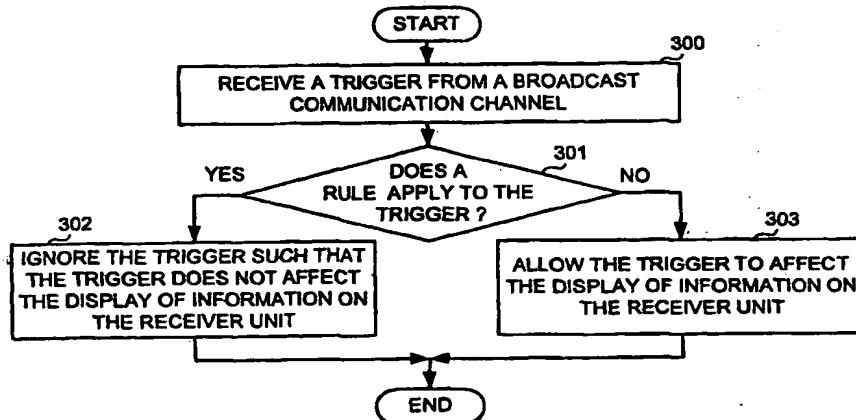
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(54) Title: ENABLING AND/OR DISABLING SELECTED TYPES OF BROADCAST TRIGGERS



(57) Abstract

In interactive television, information from an information resource (119) may be displayed along with television video (117) in a synchronized fashion. When information is to be displayed at a point in the television video, a trigger (118) is broadcast along with the television video. The trigger identifies the information resource and indicates how information from the information resource is to be displayed. In accordance with the invention, a receiver unit (105) ignores some triggers whereas other triggers are not ignored. When the receiver unit receives a trigger, the receiver unit determines whether a rule (301) stored in the receiver unit applies to the trigger. If the rule applies, then the receiver unit takes a predetermined action. If the rule does not apply, then the rule has no effect and the trigger is acted upon by the receiver unit in normal fashion. In one embodiment, the predetermined action is to ignore the trigger. By including one or more such rules in the receiver unit, the receiver unit is made to ignore certain specific types of triggers but not to ignore others. The rules can be automatically loaded into the receiver unit on power-up by one-way broadcast communication over the airwaves, from a permanent storage device coupled to the receiver unit, or by downloading from the Internet. The rules can be updated periodically.

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1 ENABLING AND/OR DISABLING SELECTED TYPES OF BROADCAST
2 TRIGGERS

7 BACKGROUND INFORMATION

8 Figure 1 (Prior Art) is a diagram of an interactive
9 television system 100 that enhances a television viewing
10 experience by integrating television programming with content
11 from the Internet. The broadcast of a baseball game can, for
12 example, be enhanced by retrieving relevant information (for
13 example, a batter's batting statistics 101) from the Internet
14 and displaying that information at an appropriate point in the
15 baseball game (for example, when the batter 102 is batting).

16 System 100 includes a server 103 maintained by the
17 broadcaster, a broadcasting antenna 104, a receiver unit 105, a
18 television set 106, and an Internet access point 107. Receiver
19 unit 105 includes a receiving antenna 108 and a remote control
20 unit 109. A viewer uses remote control unit 109 to control the
21 receiver unit and/or to interact with interactive television
22 content via the receiver unit. A video link 110 couples
23 receiver unit 105 to television set 106 so that the receiver
24 unit can use the television set as a display device.

25 Figure 2 is a block diagram of receiver unit 105. TV
26 interface circuitry 111 of the receiver unit 105 includes a
27 tuner that is tuned to receive the broadcast television video
28 and to remove a television carrier signal. After the carrier
29 signal is removed, TV interface circuitry 111 digitizes the
30 resulting video signal. Software executed by a digital
31 processor 112 receives the digitized signal from TV interface
32 111 and decodes and checks the digitized signal for errors.
33 Receiver unit 105 drives the television set 106 via video
34 encoder 113 and audio digital-to-analog converter 114. Digital
35 processor 112 realizes a type of web browser that can access the

1 Internet via a modem 115. Receiver unit 105 includes an
2 infrared interface 116 for receiving infrared transmissions from
3 remote control unit 109.

4 To enhance the baseball game by the display of batter
5 statistics 101, television video 117 is broadcast over the
6 airwaves from broadcasting antenna 104 to receiving antenna 108
7 of receiver unit 105. At an appropriate time in the baseball
8 game when the broadcaster wishes batter statistics 101 to be
9 displayed (for example, when batter 102 appears on the
10 television screen), the broadcaster broadcasts a trigger 118
11 along with the television video 117. Trigger 118 contains a
12 Uniform Resource Locator (URL) that identifies an information
13 resource 119 on the broadcaster's server 103. In this case,
14 information resource 119 is a web page containing the batter's
15 statistics.

16 Receiver unit 105 receives trigger 118, accesses the
17 Internet via Internet access point 107, uses the URL from the
18 trigger to retrieve the web page of batter statistics from
19 server 103, and then displays the batter statistics 101. In
20 this way, broadcasters use triggers to have their viewers'
21 receiver units retrieve information from the Internet and
22 display that information in concert with their programming.

23 A service company may, for a fee, provide receiver units
24 and Internet access to individuals viewers. The service company
25 may not be an Internet Service Provider (ISP) that maintains the
26 Internet access point. Rather, the service company contract
27 with an ISP and then resell the Internet access to individual
28 viewers. The service company may pay the ISP for the Internet
29 activity of its viewers by the connect-hour. The service
30 company therefore has an interest in controlling the magnitude
31 of Internet accessing so that it can keep associated costs from
32 exceeding the amount it bills its individual viewers.

33 As seen from the illustration of Figure 1, a broadcaster
34 that transmits an unduly large number of triggers could cause
35 the service company to incur large charges from the ISP. A

1 means of controlling such costs and inducing broadcasters to
2 reimburse the service company for costs associated with their
3 transmissions is desired.

4

5 **SUMMARY**

6 In interactive television, information from an information
7 resource may be displayed along with television video in a
8 synchronized fashion. When information is to be displayed at a
9 point in the television video, a trigger is broadcast along with
10 the television video. The trigger identifies the information
11 resource and indicates how information from the information
12 resource is to be displayed. Some triggers are ignored in
13 accordance with the invention whereas other such triggers are
14 not ignored. When the receiver unit receives a trigger, the
15 receiver unit determines whether a rule stored in the receiver
16 unit applies to the trigger. If the rule applies, then the
17 receiver unit takes a predetermined action. If the rule does
18 not apply, then the rule has no effect and the trigger is acted
19 upon by the receiver unit in normal fashion (a default trigger
20 handling condition). In one embodiment, the predetermined
21 action is to ignore the trigger. By including one or more such
22 rules in a receiver unit, the receiver unit is made to ignore
23 certain specific types of triggers but not to ignore other types
24 of triggers. The rules can be automatically loaded into the
25 receiver unit on power-up by broadcast communication over the
26 airwaves, from a permanent storage device (coupled to or a part
27 of) the receiver unit, or by downloading from the Internet. The
28 rules can be updated periodically.

29 A service company can cause receiver units to ignore
30 certain types of triggers by causing the receiver units to load
31 particular lists of rules. Accordingly, triggers from a
32 particular broadcaster that does not reimburse the service
33 company for costs associated with supporting the triggers can be
34 disabled. It is therefore believed that a service company's
35 capability to disable particular triggers may help induce

1 broadcasters to reimburse service companies for Internet access
2 costs associated with supporting the broadcaster's triggers.

3 Other methods and structures are disclosed in the detailed
4 description below. This summary does not purport to define the
5 invention. The invention is defined by the claims.

6

7 BRIEF DESCRIPTION OF THE DRAWINGS

8 Figure 1 (Prior Art) is a simplified diagram of an
9 interactive television system employing triggers.

10 Figure 2 (Prior Art) is a block diagram of the receiver
11 unit 105 of the system of Figure 1.

12 Figure 3 is a flowchart of a method in accordance with an
13 embodiment of the present invention.

14 Figure 4 is a flowchart of a method in accordance with
15 another embodiment.

16 Figure 5 is a flowchart of a method in accordance with
17 another embodiment.

18 Figure 6 is a flowchart of a method in accordance with
19 another embodiment.

20 Figure 7 is a diagram of a list of rules in accordance with
21 an embodiment.

22 Figure 8 is a flowchart of a method in accordance with
23 another embodiment.

24 Figure 9 is a block diagram of one embodiment of a receiver
25 unit in accordance with the present invention.

26 Figure 10 is a more detailed block diagram of the TV
27 interface circuitry 903 and the digital processor 904 of Figure
28 9.

29 Figure 11 is a flowchart of a method in accordance with
30 another embodiment.

31

32 DETAILED DESCRIPTION

33 Figure 3 is a flowchart of a method in accordance with an
34 embodiment of the present invention. First (step 300), a
35 receiver unit receives a trigger from a broadcast communication

1 channel. The trigger has correct trigger syntax. The broadcast
2 communication channel can, for example, be a television channel
3 over which a television (audio and video) signal is broadcast.
4 The television signal can, for example, be transmitted over the
5 airwaves, via satellite, or through a cable television fiber
6 optic or coaxial connection.

7 The receiver unit then (step 301) makes a determination
8 whether a rule present in the receiver unit applies to the
9 trigger. The rule may, for example, contain a string of
10 characters which if present in the trigger indicates that the
11 rule applies to the trigger. If the rule is determined to apply
12 to the trigger, then the receiver unit ignores (step 302) the
13 trigger in the sense that the trigger does not affect a display
14 of information on the receiver unit. If, on the other hand, no
15 rule is determined to apply to the trigger, then the trigger is
16 handled in accordance with a default trigger handling condition.
17 In this example, the default trigger handling condition is to
18 allow the trigger (step 303) to affect the display of
19 information on the receiver unit. A trigger may affect the
20 display of information indirectly by reconfiguring or
21 manipulating functionality of the receiver unit that later
22 affects the display of information. The trigger may contain a
23 script that is executed on the receiver unit.

24 Figure 4 is a flowchart illustrating a situation wherein
25 two triggers are received on a receiver unit, the rule applying
26 to one of the triggers but not to the other. Both triggers have
27 correct trigger syntax. First (step 400), the receiver unit
28 determines that a rule does not apply to a first trigger
29 received from a broadcast communication channel. The rule may
30 be determined not to apply to the first trigger, for example,
31 because a string in the rule is not found in the first trigger.
32 Next (step 401), the receiver unit accepts the first trigger
33 such that the first trigger affects a display of information on
34 the receiver unit. The first trigger may, for example, cause
35 web content (for example, an HTML or an XML web page) to be

1 displayed on a screen of the receiver unit along with television
2 video. Next (step 402), the receiver unit determines that the
3 rule does apply to a second trigger received from the broadcast
4 communication channel. The rule may be determined to apply to
5 the second trigger, for example, because a string in the rule is
6 found in the second trigger. Next (step 403), the receiver unit
7 ignores the second trigger in the sense that the second trigger
8 does not affect the display of information on the receiver unit.
9 The rule is therefore used by the receiver unit to filter
10 triggers such that triggers to which the rule applies are
11 ignored.

12 Figure 5 is a flowchart of a method in accordance with
13 another embodiment of the present invention. First (step 500),
14 a receiver unit receives a trigger from a broadcast
15 communication channel. The trigger has correct trigger syntax.
16 The receiver unit then (step 501) makes a determination whether
17 a rule present in the receiver unit applies to the trigger. If
18 a rule is determined to apply to the trigger, then the receiver
19 unit allows the trigger (step 503) in the sense that the trigger
20 affects the display of information on the receiver unit. If, on
21 the other hand, no rule is determined to apply to the trigger,
22 then the trigger is handled in accordance with a default trigger
23 handling condition. In the example, the default trigger
24 handling condition is to ignore the trigger (step 502) such that
25 the trigger does not affect the display of information on the
26 receiver unit.

27 Figure 6 is a flowchart illustrating a situation wherein
28 two triggers are received on a receiver unit, the rule applying
29 to one of the triggers but not to the other. Both triggers have
30 correct trigger syntax. First (step 600), the receiver unit
31 determines that a rule does not apply to a first trigger
32 received from a broadcast communication channel. The rule may
33 be determined not to apply to the first trigger, for example,
34 because a string in the rule is not found in the first trigger.
35 The receiver unit ignores the first trigger (step 601) in the

1 sense that the first trigger does not affect the display of
2 information on the receiver unit. Next (step 602), the receiver
3 unit determines that the rule does apply to a second trigger
4 received from the broadcast communication channel. The rule may
5 be determined to apply to the second trigger, for example,
6 because a string in the rule is found in the second trigger.
7 The receiver unit allows the second trigger (step 603) such that
8 the second trigger affects the display of information on the
9 receiver unit.

10 Figure 7 is an illustration of a list 700 of four rules
11 701-704 in accordance with another embodiment. Each rule has
12 three fields 705-707. If the first field 705 contains the word
13 "KILL", then the rule is a negative rule in the sense that a
14 trigger to which the rule applies will be ignored. If the first
15 field 705 contains the word "ALLOW", then the rule is a positive
16 rule in the sense that a trigger to which the rule applies will
17 not be ignored but rather will be processed in normal fashion by
18 the receiver unit. In one embodiment, an icon for an
19 enhancement afforded by the trigger appears on the screen of the
20 receiver unit. If the viewer selects the icon using the remote
21 control unit of the receiver unit, then the enhancement will be
22 displayed. If the viewer does not select the icon within a
23 certain amount of time, then the icon disappears and the
24 enhancement is not displayed. There are, however, other
25 triggers called "auto triggers" that cause enhancements to be
26 displayed automatically without the user having to select an
27 icon or take other action. These "auto triggers" are triggers
28 that have an attribute called "AUTO". The default trigger
29 handling condition for auto triggers is to ignore "auto
30 triggers" unless they are enabled in the list of rules. If the
31 first field contains the word "AUTO", then the rule is a
32 positive rule that also allows specified auto triggers.

33 The second field 706 contains a match requirement. For a
34 rule to apply to a given trigger, the trigger must meet the
35 match requirement. In the example illustrated, the second field

1 706 contains characters and/or wildcards that define a character
2 string that must be present in the trigger for the rule to
3 apply. The asterisk symbol is a wildcard that represents any
4 one or more characters. Accordingly, the "*MNF.HTML*" in the
5 second field 706 of rule 701 indicates a trigger containing the
6 character string MNF.HTML, where that character string is both
7 preceded and followed by one or more other characters. In some
8 embodiments, asterisks are assumed to be present both before and
9 after strings in the second field such that the asterisks before
10 and after "MNF.HTML" would be assumed and need not be included
11 in the rule.

12 The third field 707 contains another match requirement.
13 For a rule to apply to a trigger, the view attribute value in
14 the third field of the rule must match the view attribute value
15 of the trigger. Possible view attribute values are "TV", "WEB"
16 and the wildcard value asterisk. If an asterisk is present in
17 the third field 707 of a rule, then the trigger need not have
18 any particular view attribute value in order for the rule to
19 apply.

20 The view attribute value "TV" in a trigger indicates that
21 the trigger is only applicable to receiver unit operation when
22 the receiver unit is displaying television content (either only
23 television content is being displayed or television content with
24 enhancements are being displayed). The view attribute value
25 "WEB", on the other hand, indicates that the trigger is only
26 applicable to receiver unit operation when the receiver unit is
27 displaying only web content (no television content is being
28 displayed). A trigger having the view attribute "WEB" in a
29 trigger, if activated by a viewer, could cause the receiver unit
30 to leave the interactive television mode ("TV" mode) and go into
31 the web only browser mode ("WEB" mode).

32 Figure 8 is a flowchart of method in accordance with
33 another embodiment. The list 700 of rules 701-704 is first
34 loaded (step 800) into the receiver unit. This list may be
35 loaded into the receiver unit automatically on power-up of the

1 receiver unit or may already be present in memory. The list may
2 be broadcast to the receiver unit (for example, by a one-way
3 broadcast over the airwaves, over a satellite link, or over a
4 cable connection) or may be received by the receiver unit over a
5 packet-switched network (for example, over the Internet). On
6 power-up, if a list of rules is not present or an updated list
7 of rules is available, then the receiver unit may use a modem to
8 establish a dial-up connection to the Internet and retrieve the
9 list of rules from a web page (for example, an HTML or an XML
10 web page). Thus, the receiver unit may update its rules
11 periodically (for example, by receiving a broadcast
12 communication of the rules or by retrieving the rules from a
13 predetermined location on a network). The loading of these
14 rules occurs automatically and is out of the control of the
15 viewer. The rules, once loaded, preferably are not alterable by
16 the viewer.

17 Next, the receiver unit receives a trigger from a broadcast
18 channel (step 801). In one embodiment, the trigger has proper
19 trigger syntax as set forth in: the "Advanced Television
20 Enhancement Forum Specification (ATVEF)", draft version 1.1,
21 revision 26 (1999); and the "Transport of Internet Uniform
22 Resource Locator (URL) Information Using Text-2 (T-2) Service"
23 standard EIA-746-A (the content of these two documents is
24 incorporated herein by reference). The trigger may contain a
25 script as set forth in U.S. patent application serial number
26 _____, entitled "Communicating Scripts In A Data Service Channel
27 Of A Video Signal", filed April 7, 1999, by Blackketter et al.
28 (the content of this document is incorporated herein by
29 reference). The trigger may have the following general form
30 including multiple attribute/value pairs:

31 <<http://www.broadcast.com/program/mnf.html>>[view:TV][script:__][checksum]
32 For additional information on triggers containing URLs usable in
33 accordance with some embodiments, see: U.S. patent application
34 serial number 09/099,118, entitled "Communicating Logical
35 Addresses Of Resources In A Data Service Channel Of A Video

1 Signal", filed June 17, 1998, by Daniel J. Zigmond et al. (the
2 content of this document is incorporated herein by reference).

3 Next (step 802), the receiver unit determines whether there
4 are any rules stored in the receiver unit. If there are no
5 rules (for example, no list was loaded), then the trigger is
6 allowed (step 808). The trigger may, for example, affect the
7 display of information on a screen of the receiver unit.

8 In one example, a trigger for which no rule applies (for
9 example, because no rules are present in the receiver unit) is
10 treated in accordance with a default trigger handling condition.
11 In the illustrated example of Figure 8, the default trigger
12 handling condition is to allow triggers. If it is determined
13 there is no rule in step 802, then the trigger is allowed in
14 step 808 and is processed in ordinary fashion by the receiver
15 unit. Other default trigger handling conditions are, however,
16 possible. In one example, a trigger for which no rule applies
17 is ignored. In another example, some triggers for which no rule
18 applies are allowed whereas others are ignored.

19 If there is a rule in the list of rules (step 802), then
20 the trigger is checked (step 803) against the first rule in the
21 list to determine whether the rule applies to the trigger. In
22 the example of Figure 7, rule 701 would apply to any trigger
23 that contains the string identified by the *mnf.html* in the
24 second field 706. If rule 701 is determined by the receiver
25 unit to apply to the trigger received in step 801, then
26 processing proceeds to step 804. Because rule 701 is a negative
27 rule, processing proceeds to step 805. The trigger is ignored
28 such that the trigger does not affect the display of information
29 on the receiver unit.

30 If, on the other hand, the rule is determined not to apply
31 to the trigger in step 803, then rule 701 has no affect.
32 Processing proceeds to step 806 where a determination is made as
33 to whether there is another rule in list 700. Because there is
34 another rule in list 700, processing proceeds to the next rule
35 702 (step 807).

1 The trigger received in step 801 is then checked against
2 the second rule 702 (step 803) to determine whether the second
3 rule 702 applies to the trigger. If rule 702 applies, then a
4 determination is made (step 804) whether the rule is a positive
5 rule or a negative rule. Rule 702 is a positive rule as
6 indicated by the "ALLOW" in the first field 705.

7 Because the default trigger handling condition in this
8 example is to allow triggers, application of such a rule would
9 have no affect other than preventing the trigger from being
10 tested against subsequent rules in the list. If, for example,
11 second rule 702 is determined to apply to the trigger received
12 in step 801, then processing proceeds to step 808, the trigger
13 is allowed, and processing proceeds back to step 801 without the
14 trigger being tested against the last two rules 703 and 704 of
15 the list 700. It is therefore seen that including a positive
16 rule in the list where the default trigger handling condition is
17 to allow triggers provides a way of having certain types of
18 triggers not be tested against subsequent rules.

19 If second rule 702 does not apply to the trigger received
20 in step 801, then processing proceeds to step 806 and step 807
21 and the trigger is checked against the third rule 703 in step
22 803. If the third rule 703 is determined to apply to the
23 trigger, then the trigger is ignored in step 805 and processing
24 proceeds back to step 801. If, on the other hand, the third
25 rule 703 is determined not to apply, then processing proceeds
26 through steps 806 and 807 and the trigger is checked against the
27 fourth rule 704.

28 If fourth rule 704 applies, then the trigger is an "auto
29 trigger". Supporting such an auto trigger may be relatively
30 expensive for a service company that provides the Internet
31 access to users of receiver units. This is so because the
32 receipt of an auto trigger may cause the receiver unit of a
33 viewer to automatically initiate an Internet connection to
34 retrieve web content. If a broadcaster is to broadcast such
35 triggers that cause the service company to incur large Internet

1 costs, it may be desired to have the broadcaster reimburse the
2 service company in some way. The service company may therefore
3 only provide rules that enable the auto triggers of particular
4 authorized broadcasters. If a broadcaster does not provide
5 adequate compensation to a service company, then the service
6 company can prevent the broadcaster from using auto triggers by
7 removing the auto rules from the lists of rules in the receiver
8 units.

9 If fourth rule 704 does not apply, then processing proceeds
10 to step 806. Because the fourth rule 704 is the last rule in
11 the list, processing proceeds to step 808. The trigger is then
12 handled in accordance with the default trigger handling
13 condition (in this example, the default trigger handling
14 condition is to allow triggers that are not auto triggers).

15 Accordingly, a receiver unit can be made to have one of
16 many different levels of functionality by tailoring the rules in
17 the list. Receiving units can be made to treat triggers from
18 different broadcasters differently. System reliability can be
19 improved by having receiver units ignore triggers that would
20 otherwise cause failures in the receiver. In some situations,
21 test triggers are broadcast and it is not desired that receiver
22 units of ordinary viewers act on these test triggers. By
23 loading different rules into receiver units involved in the
24 testing from the rules loaded into the receiver units of
25 ordinary users, test triggers can be made to be received and
26 operated on only by the desired receiver units involved in the
27 test. Although the broadcast test triggers are received by the
28 other receiver units, those other receiver units are made to
29 ignore the test triggers.

30 Although the rules in the example of Figure 7 have
31 particular fields, it is to be understood that numerous other
32 types of rules for distinguishing some triggers from other
33 triggers are possible in accordance with the invention.
34 Although the method of Figure 8 parses the rules of the list 700
35 in sequential top-down order and exists the list after the

1 finding a rule that applies to the trigger, other methods of
2 determining whether rules apply to triggers are possible.

3 For example, a rule may contain another field containing
4 the text "CONNECT" . If a positive rule containing such a field
5 with the text "CONNECT" is determined to apply to a trigger,
6 then the receiver unit allows the trigger to initiate an
7 Internet connection. If a negative rule containing such a field
8 with the text "CONNECT" is determined to apply to a trigger,
9 then the receiver unit ignores the trigger. Alternatively, the
10 receiver unit can allow the trigger to be processed but the
11 receiver unit prevents the trigger from initiating a connection
12 to the Internet.

13 Figure 9 is a block diagram of one embodiment of a receiver
14 unit 900 that carries out the method of Figure 8. Receiver unit
15 900 is part of an interactive television system similar to
16 system 100. In some embodiments, the receiver unit is
17 integrated into a television set. In other embodiments the
18 receiver unit and the television set are separate devices that
19 are coupled together as illustrated in Figure 1. In other
20 embodiments, the receiver unit is a part of a computer and the
21 screen on which the television video is displayed connected to
22 the computer.

23 Receiver unit 900 includes local storage 901, an infrared
24 interface 902 for coupling the receiver unit to a remote control
25 unit, TV interface circuitry 903 that receives a broadcast
26 television signal, a digital processor 904, a modem 905 for
27 coupling the receiver unit 900 to a network (for example, the
28 Internet), an audio digital-to-analog converter 906 and a video
29 encoder 907 for driving an ordinary analog television set.
30 Although receiver unit 900 is coupled to the Internet via modem
31 and an Internet access point, no such coupling is required. All
32 of the triggers, web content, HTML and graphics for an
33 interactive television system can be delivered by embedding them
34 into the broadcast video signal 908.

1 Figure 10 is a more detailed view of the TV interface
2 circuitry 903 and the digital processor 904 of Figure 9. A
3 broadcast television signal 908 including interactive television
4 triggers, announcements and data is received onto TV interface
5 circuitry 903. A tuner 909 of the TV interface circuitry 903 is
6 tuned to a broadcast channel containing the broadcast television
7 signal 908 and removes a carrier signal. The resulting signal
8 is then passed to a digitizer 910 of the TV interface circuitry
9 903. The resulting digitized information 918 is then supplied
10 to digital processor 904. Data decoder software 911 realized by
11 the digital processor 904 parses the digitized information 918
12 and extracts any triggers, announcements and data that are
13 present. The triggers 912, announcements 913 and associated
14 data 914 are supplied to browser software 915. Software that
15 carries out the method of Figure 8 is represented as trigger
16 filter block 916. Accordingly, some triggers pass through
17 trigger filter block 916 whereas other triggers do not. The
18 types of triggers that pass through and the types that do not
19 are determined by the rules in the list of rules. The list of
20 rules may, for example, be stored in local storage 901.
21 Triggers 917 that pass through the trigger filter block 916 are
22 generally acted upon in normal fashion by browser software 915.
23 Browser software 915 may, for example, receive a trigger from
24 trigger filter block 916, extract a Uniform Resource Identifier
25 (URI) from the trigger, access the Internet via modem 915 to
26 retrieve web content identified by the URI, merge the retrieved
27 web content and television video together, and then drive the
28 video encoder 907 and audio digital-to-analog converter 906 so
29 that the merged content is displayed on a screen of a television
30 in a fashion determined by the trigger. The URI in this example
31 may be a Uniform Resource Locator (URL) that locates an
32 information resource on the World Wide Web. In an alternate
33 embodiment, the URI can access a file stored locally that
34 includes the web content.

1 Figure 11 is a flowchart of a method in accordance with
2 another embodiment. A trigger is received onto a receiver unit
3 from a broadcast communication channel (step 1100). Next (step
4 1101), the receiver unit checks the trigger for proper syntax.
5 If the trigger is uncorrupted and has proper syntax, then the
6 receiver unit checks the trigger against a list of negative
7 rules (step 1102) stored in the receiver unit. If any of the
8 negative rules in the list applies, then the check fails and the
9 trigger is ignored (step 1103). If, on the other hand, none of
10 the negative rules applies, then processing proceeds to step
11 1104 where a determination is made of whether the receiver unit
12 is currently displaying an enhancement. An enhancement may, for
13 example, involve displaying information from a web (HTML or XML)
14 page along with television video. If an enhancement is being
15 displayed, then processing proceeds to step 1105. If a URI in
16 the trigger matches the URI of the enhancement (for example, the
17 URI is a URL and it matches the URL of the HTML or XML web page
18 containing information that is being displayed), then processing
19 proceeds to step 1106. If the trigger contains a script (step
20 1106), then browser software in the receiver unit executes the
21 script (step 1107) thereby affecting the enhancement.

22 If, on the other hand, the receiver unit determines in step
23 1104 that an enhancement is not being displayed, then processing
24 proceeds to step 1108. If the trigger is an "auto trigger",
25 then the browser in the receiver unit acts on the trigger in
26 step 1109. In one example, the receiver unit automatically
27 establishes an Internet connection (for example, using a modem
28 of the receiver unit), uses the URI of the trigger to retrieve
29 web content identified by the URI, and displays the retrieved
30 web content in a fashion specified by the trigger. The web
31 content identified by the URI can be retrieved from either the
32 broadcast communication channel or the Internet in accordance
33 with techniques set forth in U.S. patent application serial
34 number ___, entitled "Receiving An Information Resource From
35 The Internet If It Is Not Received From A Broadcast Channel",

1 filed April 20, 1999, by Zigmond et al. (the content of which is
2 incorporated herein by reference).

3 If, on the other hand, the trigger is not an "auto
4 trigger", then processing proceeds from step 1108 to step 1110
5 where a prompt appears on the receiver unit screen querying the
6 viewer whether the viewer wishes to view the enhancement. If
7 the viewer confirms that the enhancement is to be viewed (step
8 1111), then the browser in the receiver unit acts on the trigger
9 in step 1109. If the viewer fails to confirm that the
10 enhancement is to be viewed in step 1111, then processing
11 proceeds to step 1103 and the trigger is ignored.

12 In the embodiment of Figure 11, the default trigger
13 handling condition is that auto triggers are enabled.
14 Embodiments are possible, however, where the default trigger
15 handling condition is that auto triggers are disabled. In such
16 an embodiment, a positive rule must be applied in step 1102 in
17 order for an auto trigger to be executed automatically as an
18 auto trigger. If an auto trigger is received and no negative
19 rule applies and no positive rule applies, then the auto trigger
20 is handled in accordance with the default trigger handling
21 condition for auto triggers (i.e., the auto trigger is ignored).

22 Although the present invention is described in connection
23 with certain specific embodiments for instructional purposes,
24 the present invention is not limited thereto. Different types
25 of triggers that do not affect the display of information on a
26 receiver unit can be distinguished from one another and treated
27 differently using a trigger filter. A browser may include a
28 filter for disabling messages other than triggers. A browser
29 may, for example, include a filter that ignores certain types of
30 announcements and allows of types of announcements. Different
31 types of triggers can be handled in accordance with different
32 default trigger handling conditions such that if no rule applies
33 to a first trigger of a first type then the first trigger is
34 handled in a first way, but if no rule applies to a second
35 trigger of a second type then the second trigger is handled in a

1 second way. The receiver unit may receive broadcast video,
2 triggers, rules, and web content all from a single cable modem
3 connection. The structure of Figure 9 is but one of many
4 embodiments of a receiver unit that can carry out methods in
5 accordance with the present invention. A receiver unit can, for
6 example, be realized using a computer and a tuner expansion
7 card. Various functions of the receiver unit can be realized in
8 software, in hardware, or both. Software and/or rules for
9 implementing various features of the receiver unit can be stored
10 on a computer-readable medium. Examples of computer-readable
11 mediums include magnetic and optical storage media and
12 semiconductor memory. Triggers can be broadcast over any
13 suitable transport including vertical blanking interval (VBI)
14 line 21 and/or lines 10-20 of an NTSC television signal.
15 Accordingly, various modifications, adaptations, and
16 combinations of various features of the described embodiments
17 can be practiced without departing from the scope of the
18 invention as set forth in the claims.

1 CLAIMS

2 What is claimed is:

3

4 1. A method, comprising:

5 (a) determining whether a rule applies to a trigger, the
6 trigger having been received by a receiver unit from a
7 broadcast communication channel; and8 (b) if the rule is determined to apply to the trigger, then
9 ignoring the trigger such that the trigger does not affect a
10 display of information on the receiver unit; and11 (c) if the rule is determined not to apply to the trigger,
12 then allowing the trigger to affect the display of the
13 information on the receiver unit.

14

15 2. The method of Claim 1, wherein:

16 the rule is determined in step (a) to apply to a first
17 trigger, the first trigger being ignored in step (b) such that
18 the first trigger does not affect the display of the
19 information on the receiver unit, and20 the rule is determined in step (a) not to apply to a second
21 trigger, the second trigger affecting the display of the
22 information on the receiver unit.

23

24 3. The method of Claim 2, wherein television video is received
25 from the broadcast communication channel and wherein web
26 content is received from a packet-switched network, the web
27 content being identified by the second trigger, the television
28 video and the web content being displayed at the same time on
29 the receiver unit.

30

31 4. The method of Claim 1, wherein the rule includes a string, and
32 wherein the rule is determined in step (a) not to apply to the
33 trigger if the trigger does not contain the string, and
34 wherein the rule is determined in step (a) to apply to the
35 trigger if the trigger does contain the string.

- 1
- 2 5. The method of Claim 1, wherein steps (a), (b) and (c) are
- 3 carried out in a browser of the receiver unit.
- 4
- 5 6. The method of Claim 1, wherein the information is information
- 6 retrieved from a packet-switched network.
- 7
- 8 7. The method of Claim 1, wherein the information is a web page.
- 9
- 10 8. The method of Claim 1, wherein prior to step (a) the rule is
- 11 received by the receiver unit from the broadcast communication
- 12 channel.
- 13
- 14 9. The method of Claim 1, wherein prior to step (a) the rule is
- 15 received by the receiver unit from a packet-switched network.
- 16
- 17 10. The method of Claim 1, wherein the receiver unit comprises
- 18 a screen, television video being displayed on the screen.
- 19
- 20 11. The method of Claim 1, wherein the trigger comprises a
- 21 Uniform Resource Identifier (URI), the URI identifying
- 22 information stored on the receiver unit.
- 23
- 24 12. The method of Claim 1, wherein the trigger comprises a
- 25 Uniform Resource Identifier (URI), the URI identifying
- 26 information on a packet-switched network.
- 27
- 28 13. A receiver unit that receives both video information and
- 29 triggers from a broadcast communication channel, some of the
- 30 triggers being of a first type, others of the triggers being
- 31 of a second type, the triggers of the first type and the
- 32 triggers of the second type all having proper trigger syntax,
- 33 comprising:
 - 34 a browser; and
 - 35 a trigger filter that does not pass the triggers of

1 the first type to the browser but that does pass the
2 triggers of the second type to the browser.

3

4 14. The receiver unit of Claim 13, further comprising:
5 a rule stored in the receiver unit, the trigger filter
6 using the rule to determine if a trigger is of the first
7 type.

8

9 15. The receiver unit of Claim 13, wherein the receiver unit is
10 coupled to a packet-switched network, the receiver unit
11 receiving information from the packet-switched network, the
12 browser causing both the information from the packet-switched
13 network and the video information from the broadcast
14 communication channel to be displayed on the receiver unit at
15 the same time.

16

17 16. A receiver unit that receives both video information and a
18 trigger from a broadcast communication channel, comprising:
19 means for ignoring the trigger if the trigger is of a
20 first type;
21 means for executing the trigger such that the trigger
22 affects a display of information on a screen of the
23 receiver unit if the trigger is of a second type; and
24 means for linking the receiver unit to a packet-
25 switched network, information from the packet-switched
26 network being displayed on the screen of the receiver unit
27 along with the video information received from the
28 broadcast communication channel.

29

30 17. The receiver unit of Claim 16, wherein the means for
31 ignoring includes a plurality of rules, wherein the means
32 for executing includes a browser, and wherein the means for
33 linking includes a modem.

34

35 18. The receiver unit of Claim 16, wherein the means for

1 ignoring checks the trigger against a rule, wherein if a
2 string present in the rule is not present in the trigger
3 then the trigger is of the first type and the trigger is
4 ignored.

5

6 19. The receiver unit of Claim 18, wherein the rule is received
7 onto the receiver unit from the packet-switched network.

8

9 20. The receiver unit of Claim 18, wherein the receiver unit
10 automatically retrieves the rule on power-up from the
11 packet-switched network.

12

13 21. The receiver unit of Claim 16, wherein the video
14 information, the trigger, and the information from the
15 packet-switched network are communicated to the receiver
16 unit via one of a fiber optic cable or a coaxial cable.

17

18 22. A method of testing, comprising:

19 loading a rule into a first receiver unit, the rule
20 not being present in a second receiver unit, the first
21 receiver unit and the second receiver unit being
22 substantially structurally identical;

23 transmitting a test trigger to the first receiver unit
24 and to the second receiver unit;

25 the first receiver unit receiving the test trigger and
26 using the rule to determine that the test trigger is to be
27 ignored, the test trigger not affecting a display of
28 information on the first receiver unit; and

29 the second receiver unit receiving the test trigger,
30 the test trigger affecting a display of information on the
31 second receiver unit.

32

33 23. A method of preventing a failure in a receiver unit due to
34 a first trigger, comprising:

35 loading a rule into the receiver unit;

1 the receiver unit receiving the first trigger and
2 using the rule to determine that the first trigger is to be
3 ignored, wherein had the first trigger not been ignored
4 then the first trigger would have caused the failure in the
5 receiver unit; and

6 the receiver unit receiving a second trigger and not
7 ignoring the second trigger, the second trigger affecting a
8 display of information on the receiver unit.

9

10 24. A method of receiving triggers and displaying associated
11 web content on a receiver unit, comprising:
12 receiving a first trigger of a first type and a second
13 trigger of a second type;
14 filtering the first trigger from the second trigger;
15 and
16 displaying web page content in response to the first
17 trigger but not in response to the second trigger.

18

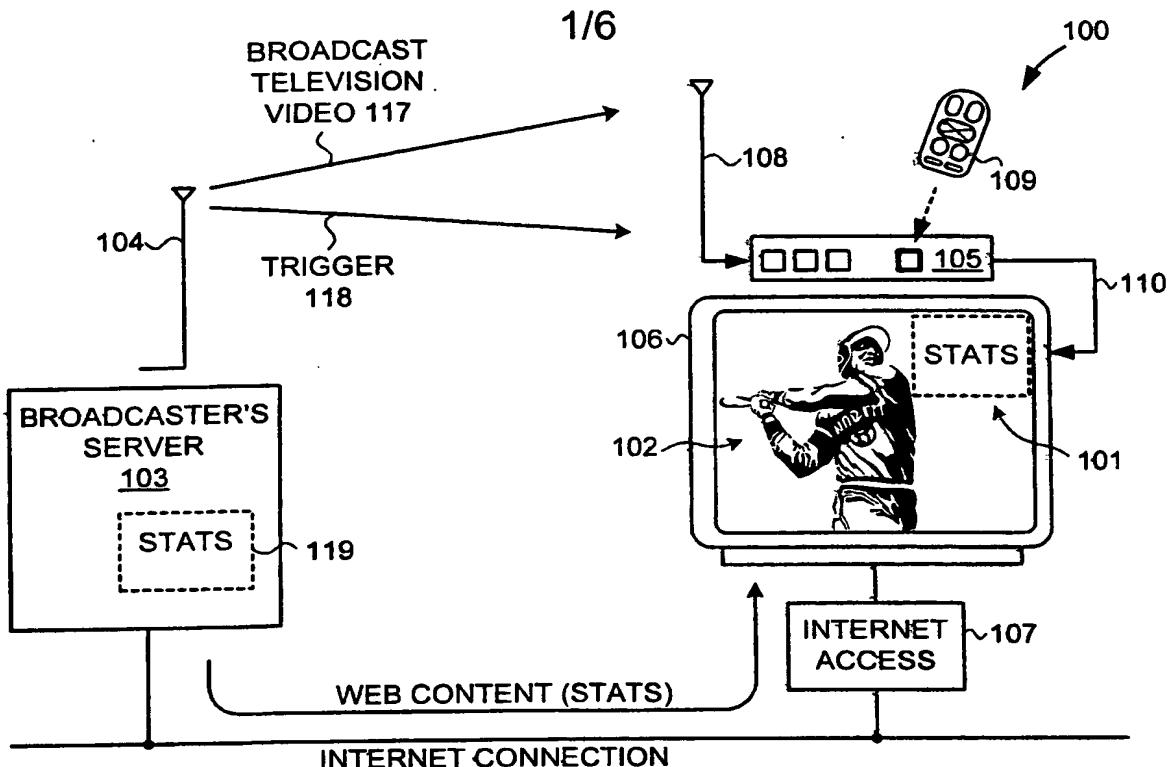


FIG. 1
(Prior Art)

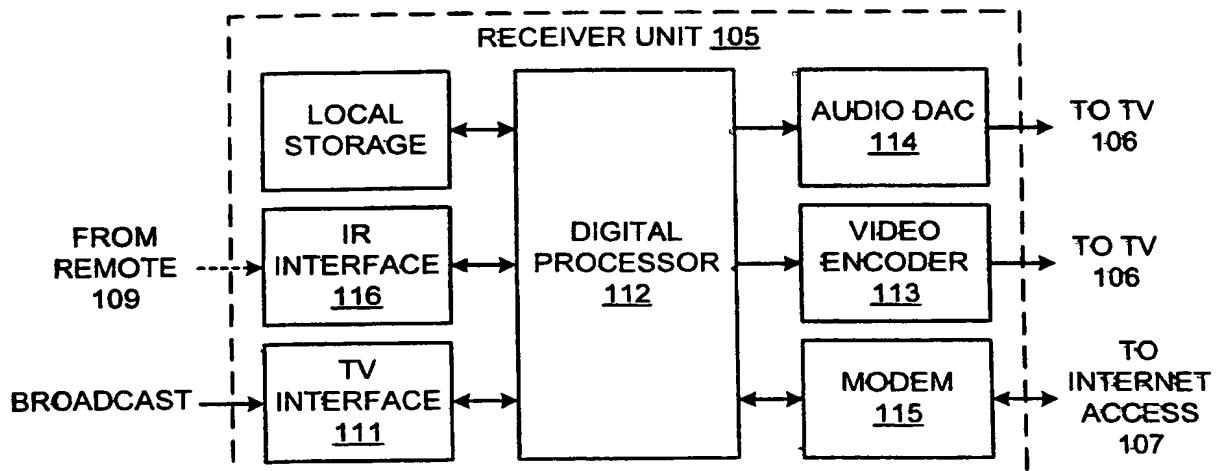


FIG. 2
(Prior Art)

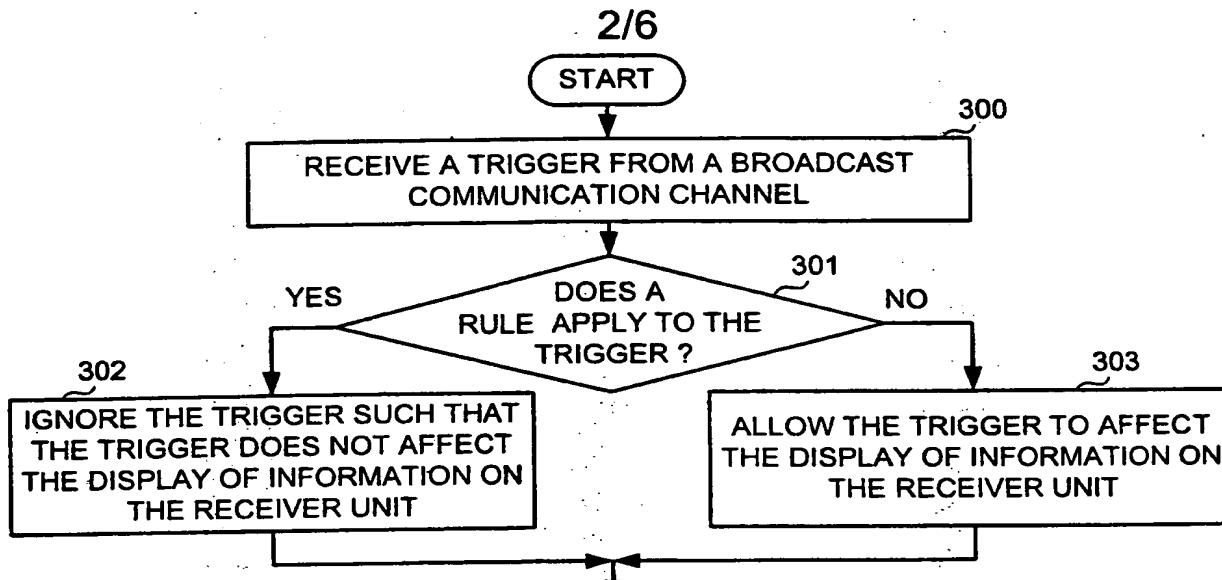


FIG. 3

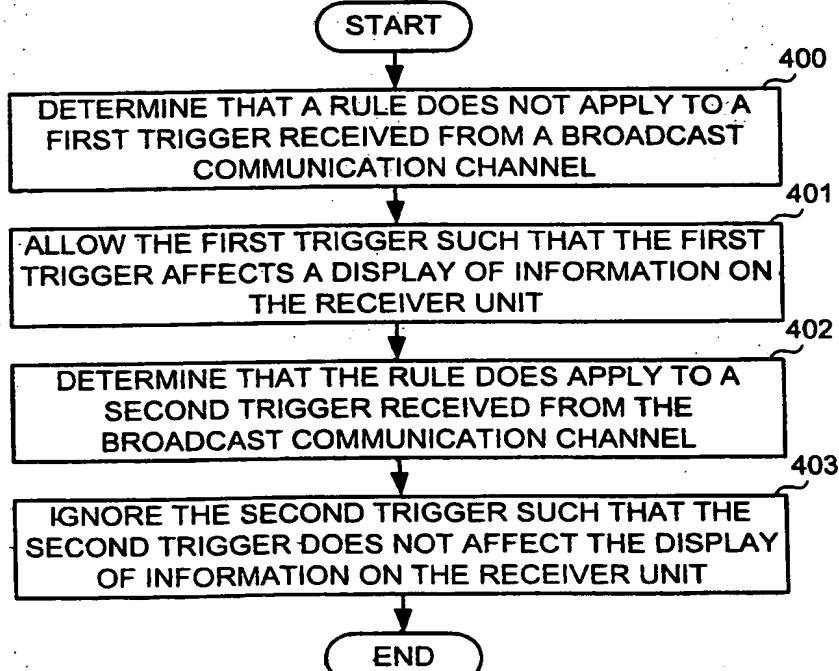


FIG. 4

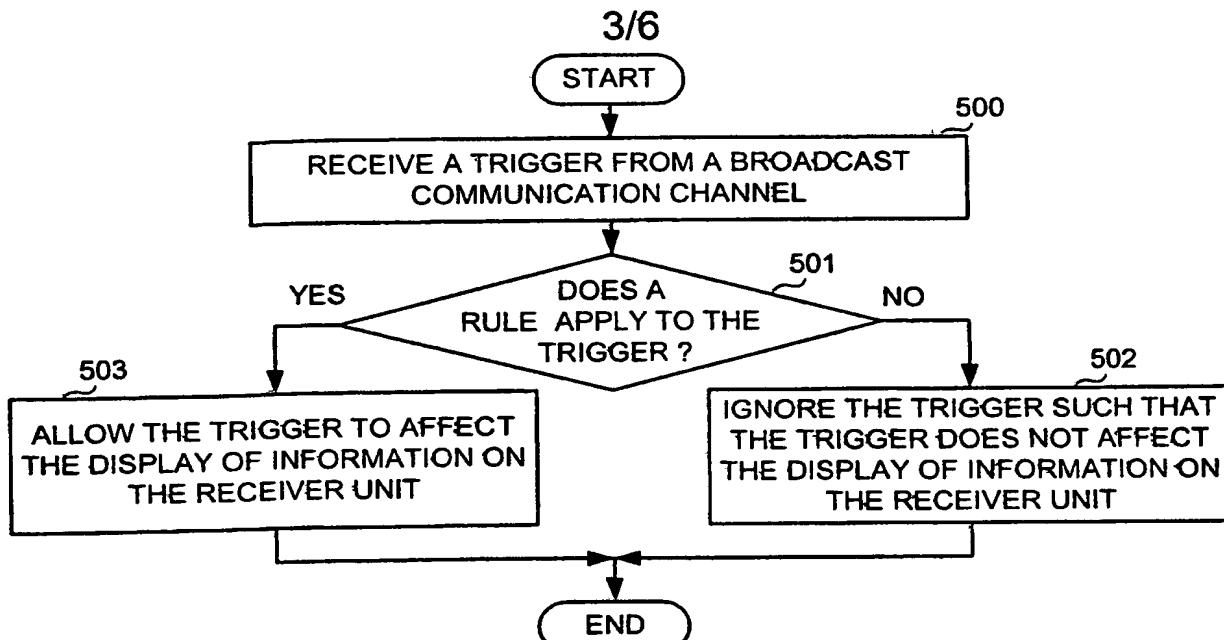


FIG. 5

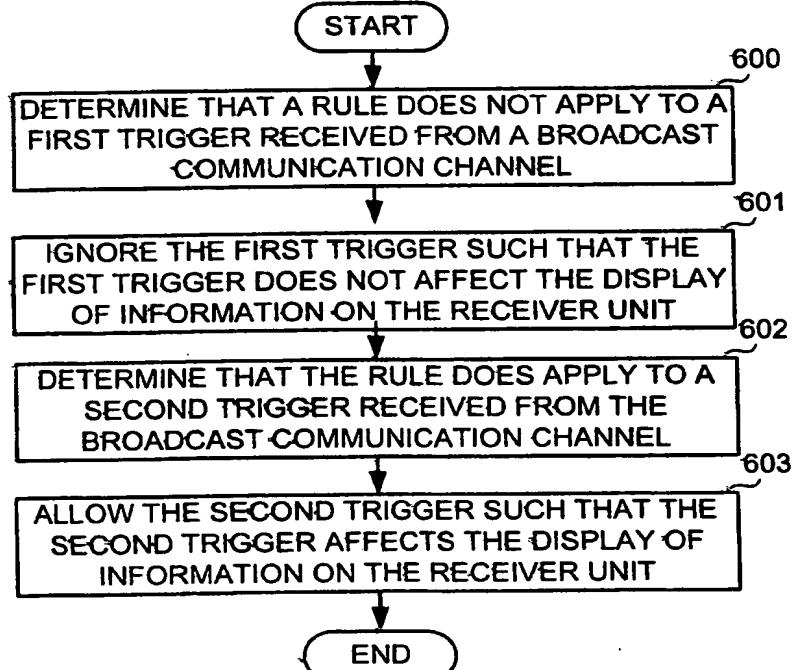


FIG. 6

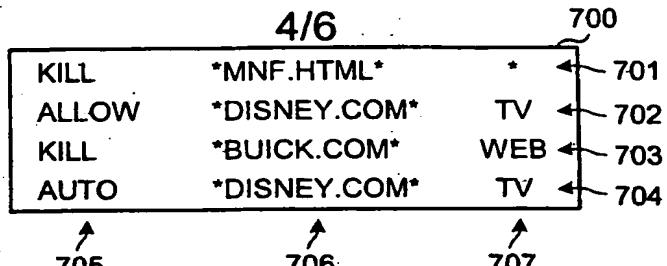


FIG. 7

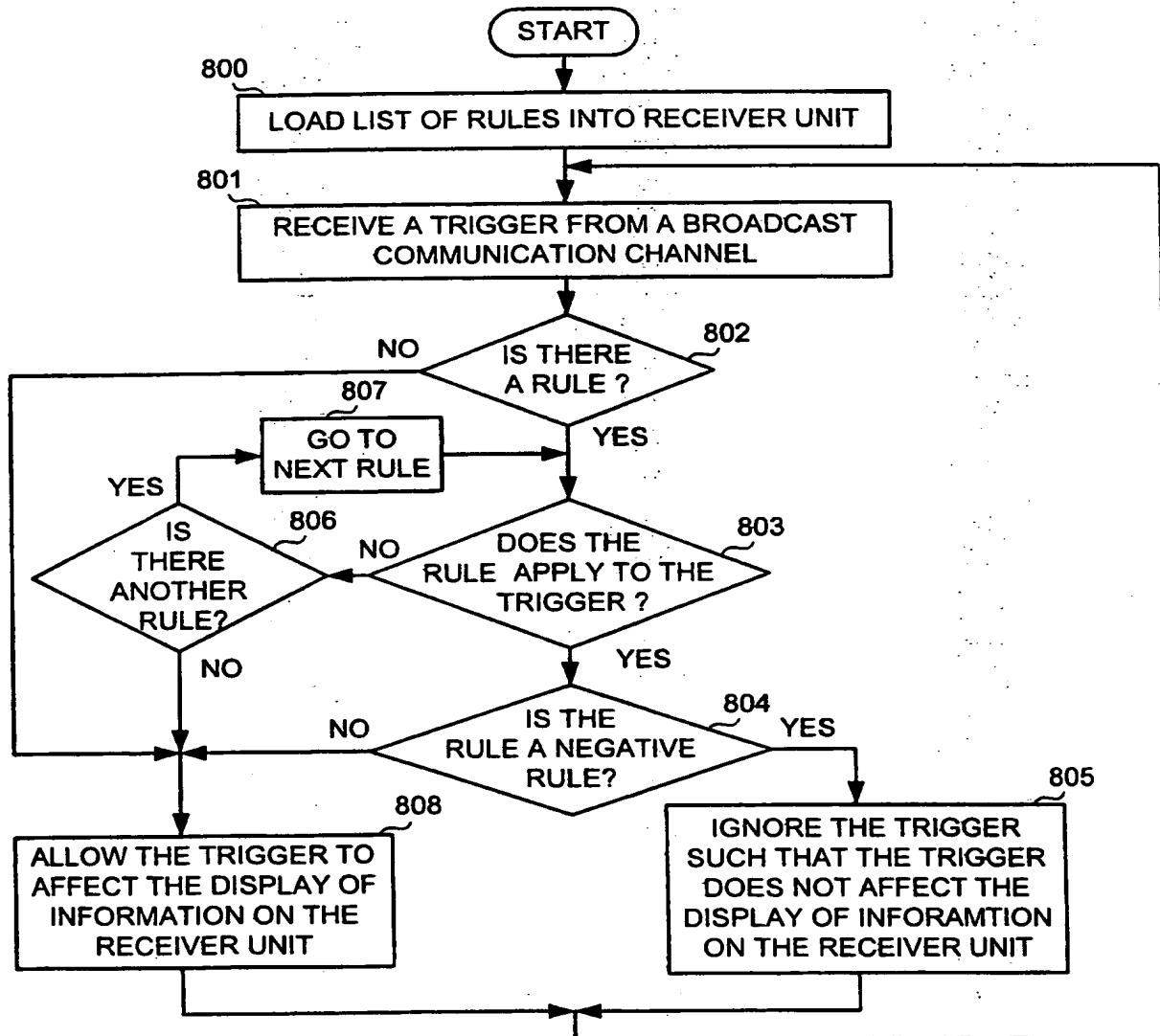


FIG. 8

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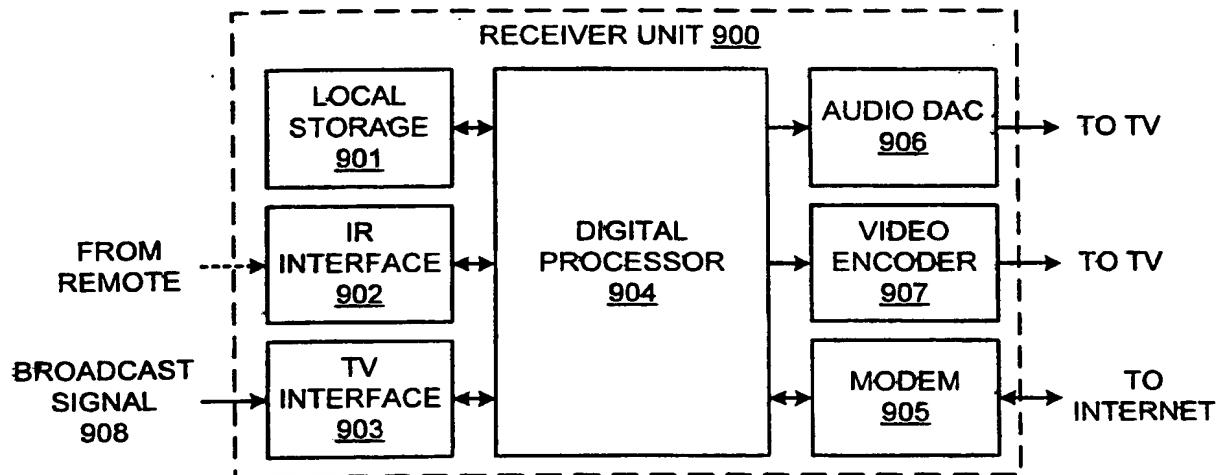


FIG. 9

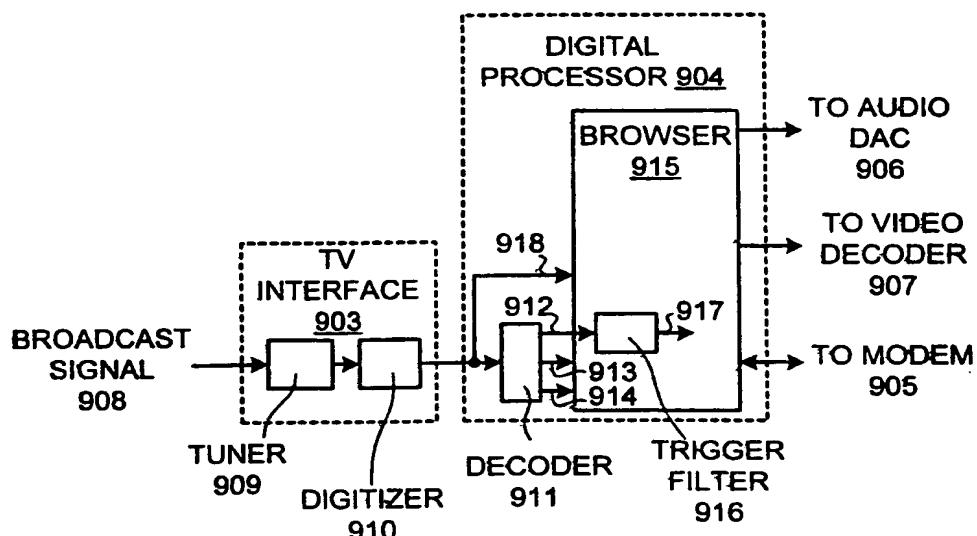


FIG. 10

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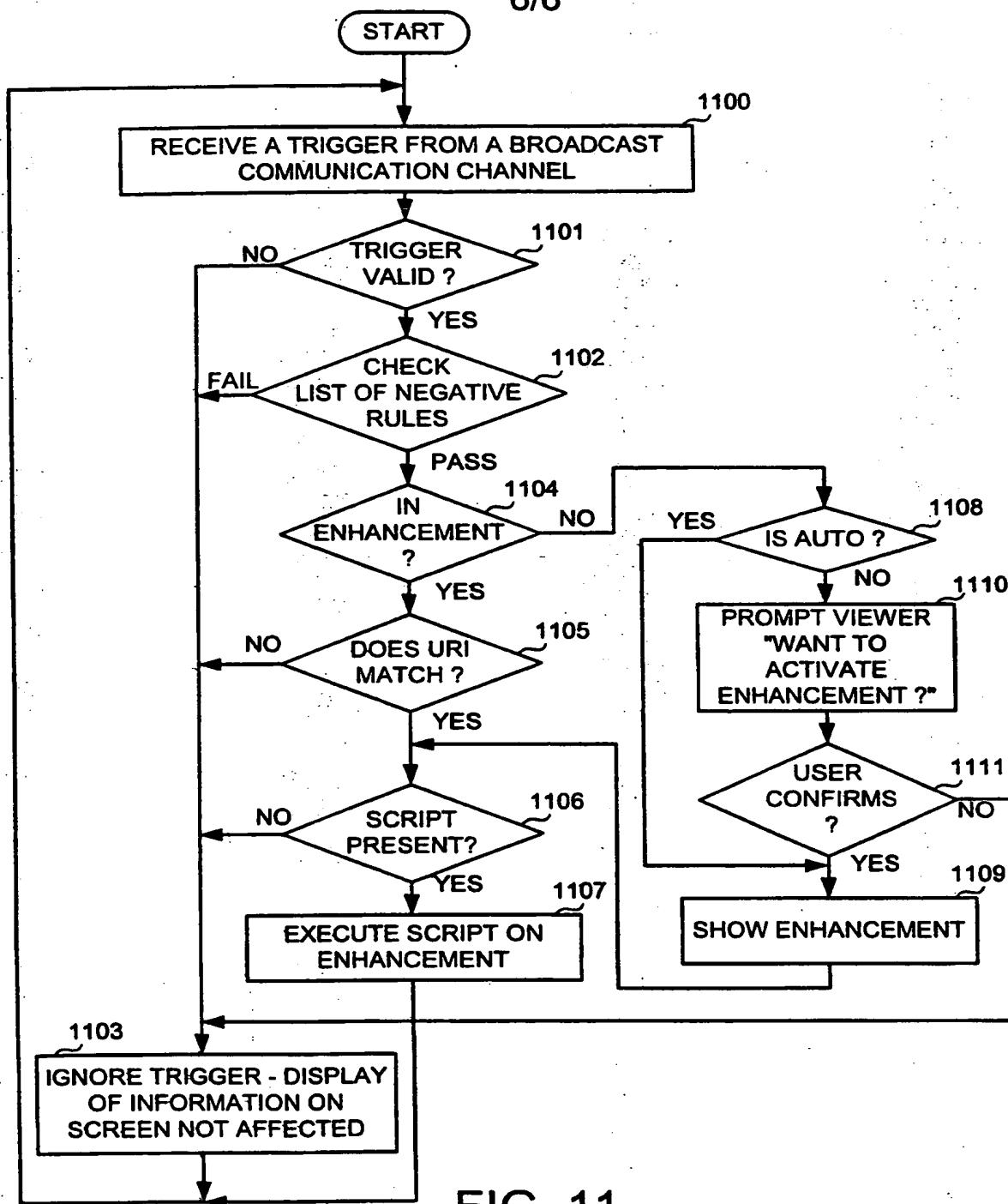


FIG. 11

INTERNATIONAL SEARCH REPORT

Internat Application No
PCT/US 00/10765

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N7/16 H04N7/088

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 41020 A (ACTV INC) 17 September 1998 (1998-09-17) page 6, line 1 - line 8 page 9, line 1 -page 10, line 17 page 28, line 12 -page 33, line 4 -----	1-24
A	"Advanced Television Enhancement Forum Specification (ATVEF), Comment Draft Version 1.0r1" 'Online! XP002142688 Retrieved from the Internet: <URL: www.intercast.org/atvef_spec/TVE-public.ht m> 'retrieved on 1999-02-25! -Using Enhanced TV- -----	1-24

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

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- "O" document referring to an oral disclosure, use, exhibition or other means
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- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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17 July 2000

Date of mailing of the international search report

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 9841020	A	17-09-1998	AU 3370597 A	29-09-1998
			EP 0965227 A	22-12-1999
			GB 2343095 A	26-04-2000
			GB 2338388 A, B	15-12-1999

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